## Space Weather Forecast

Issued on Friday, 04 November 2022 at 13:11 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Decreasing chance of G1/Minor Storms through day 1 and overnight into day 2 (4/5th November).**

**Analysis of Space Weather Activity over past 24 hours**
**Solar Activity:** Solar activity has been Low over the last 24 hours, with a Common-class flare peaking at 04/0744 UTC from a new region rotating onto the NE limb. The seven active regions on the disc are largely magnetically simple, stable and relatively inactive. One region in the northeastern disk has seen a slight increase in magnetic complexity. The two new regions rotating onto the NE limb are still difficult to classify as they may not yet be fully visible. No significant Earth directed Coronal Mass Ejections (CMEs) have been identified in recent imagery, with the CME emerging from near centre disk yesterday expected to miss below Earth's orbit. A further CME earlier today from the southeast disc is yet to be analysed.

**Solar Wind / Geomagnetic Activity:** The solar wind is showing the ongoing influence of a fast wind from a coronal hole. Wind speeds increased from slightly elevated levels to elevated levels early in the period, peaking just above 600 km/s, and are now starting ease with speeds around 550 km/s. Total magnetic field strength was moderate to start but eased through the period and is now weak. The north-south component was largely negative, varying moderately at first but now varying weakly. Geomagnetic activity was Unsettled to Active (Kp3-4) with a Minor Storm (G1/Kp5) between 03/1500-1800 UTC.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

**Four-Day Space Weather Forecast Summary**
**Solar Activity:** Solar activity is likely to be Low, with a slight chance of isolated Moderate activity. Further active regions are likely to rotate onto the visible disc during the period, and these will be assessed as they become visible.

**Solar Wind / Geomagnetic Activity:** No Earth directed CMEs are currently forecast. The current coronal hole fast wind is expected to gradually decline over the coming 24-48 hours, likely to near background levels. A further southern hemisphere coronal hole is just reaching centre disc and may start to give some influence towards the end of Day 4 (07 Nov). Geomagnetic activity is expected to be largely Unsettled to Active on Day 1 (04 Nov), with a chance of isolated G1/Minor Storm intervals, but will gradually ease through the next 24-48 hours to become mainly Quiet. An increase to Unsettled to Active towards the end of Day 4 is possible if we start to see the next coronal hole arrive.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | Yes | 30 | 10 | 1 | 10 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 15 | 15 | 15 | 15 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 1 | 1 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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